**Summarized SLO Table - Fall 2014 Update**

**Reassessment:**
- Yes means the last SLO assessment results did not meet the department expectation; reassessment should be done within one year.
- No means the last SLO assessment results met the department expectation; reassessment is not required until the end of the 3-year cycle.

<table>
<thead>
<tr>
<th>SLO Courses</th>
<th>Most recent SLO Assessment</th>
<th>Reassessment</th>
<th>Course Coordinator for 2015</th>
<th>Meeting Date Meeting Time Participants</th>
<th>Implementation and Tentative Reassessment Schedule (see next page for recommendations based on the last assessment result analysis)</th>
</tr>
</thead>
</table>
| Math 105    | Fall 2014                   | Yes          | Roula Dakdouk               | 01/20/15, Tue., 3:30 to 4:00 p.m., Roula, Yoon, & Debby | Short-term Implementation:
  1) Questions similar to SLO questions will be assigned as HW.
  2) SLO questions will be assessed right after the lecture covering the SLO concepts and HW practice in a quiz or test format.
  3) Questions similar to SLO questions will be assigned again in each practice test even the test does not include SLO question topics.
  4) SLO questions will be assessed again in the class final exam.

**Semester of Reassessment:** Spring 2015

**Long-term Implementation:**
1) Create a new modular format of Math 105ABC curriculum with no percentage word problems, composite geometry figures, and basic algebra.
   (105A- Basic arithmetic operations of whole numbers
    105B- Basic arithmetic operations of fractions
    105C- Basic arithmetic operations of decimals)
2) Create a Math 110 course which is a combined Math 105 and Math 112 course, 5.0 units, with required lab hours.
<table>
<thead>
<tr>
<th>Course</th>
<th>Fall/Winter</th>
<th>Assessment Required</th>
<th>Instructor</th>
<th>Date/Time</th>
<th>Reassessment Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 112</td>
<td>Fall 2013</td>
<td>Yes</td>
<td>Roula Dakdouk</td>
<td>01/20/15, Tue., 4:00 to 4:30 p.m., Roula, Yoon, &amp; Debby</td>
<td>1) Questions similar to SLO questions will be assigned as HW.&lt;br&gt;2) The SLO course coordinator will email all Math 112 instructors to inform them about the Math 112 worksheets available in the math department website.&lt;br&gt;3) SLO questions will be assessed right after the lecture covering the SLO concepts and HW practice in a quiz or test format.&lt;br&gt;4) Questions similar to SLO questions will be assigned again in each practice test even the test does not include SLO question topics.&lt;br&gt;5) SLO questions will be assessed again in the class final exam. Semester of Reassessment: Spring 2015</td>
</tr>
<tr>
<td>Math 115</td>
<td>Fall 2014</td>
<td>Yes</td>
<td>Bamdad Samii</td>
<td>01/12/15, Mon., 12 noon to 3:15 p.m., Bamdad, Carole, Yoon, &amp; Debby</td>
<td>1) Select a few representative SLO questions. Assess the students twice on each topic. Once when the topic is first introduced and then on the final, so the retention rates can be compared. And throughout the semester the topics will be reinforced by reviewing the problems on multiple assignments. Semester of Reassessment: Spring 2015</td>
</tr>
<tr>
<td>Math 121</td>
<td>Spring 2014</td>
<td>No</td>
<td>Ryan Yamada</td>
<td></td>
<td>Semester of Reassessment: Spring 2017</td>
</tr>
<tr>
<td>Math 123A</td>
<td>Fall 2014</td>
<td>Yes</td>
<td>Roula Dakdouk</td>
<td>01/20/15, Tue., 4:30 to 5:00 p.m., Roula, Yoon, &amp; Debby</td>
<td>1) Select a few questions from easy to difficult to measure SLO2.&lt;br&gt;2) Assign the selected questions throughout the corresponding chapter assignments and final exam practice.&lt;br&gt;3) Assess SLO2 in the corresponding chapter test.&lt;br&gt;4) Assess SLO2 again in the final exam. Semester of Reassessment: Spring 2015</td>
</tr>
<tr>
<td>Math 123B</td>
<td>Fall 2014</td>
<td>No</td>
<td>Yoon Yun</td>
<td></td>
<td>Semester of Reassessment: Fall 2017</td>
</tr>
<tr>
<td>Math 123C</td>
<td>Fall 2014</td>
<td>No</td>
<td>Debby Wong</td>
<td></td>
<td>Semester of Reassessment: Fall 2017</td>
</tr>
<tr>
<td>Math 125</td>
<td>Fall 2013</td>
<td>No</td>
<td>Emil Sargsyan</td>
<td></td>
<td>Semester of Reassessment: Fall 2016</td>
</tr>
<tr>
<td>Course</td>
<td>Semester</td>
<td>Reassessment</td>
<td>Instructor(s)</td>
<td>Time and Date</td>
<td>Reassessment Details</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>--------------</td>
<td>------------------------</td>
<td>--------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Math 129A</td>
<td>Fall 2014</td>
<td>No</td>
<td>Carole Akl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 129B</td>
<td>N/A (new course)</td>
<td>N/A</td>
<td>Carole Akl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 137</td>
<td>Fall 2014</td>
<td>Yes</td>
<td>Bamdad Samii</td>
<td>01/12/15, Mon., 11:00 a.m. to 12 noon, Bamdad &amp; Yoon</td>
<td>1) Strengthen this newly developed course curriculum based on a flipped class format. Emphasize reading the OLI text by giving students quizzes. 2) Alter some of the instruction formats if necessary. 3) Provide faculty training for this non-traditional teaching methodology.</td>
</tr>
<tr>
<td>Math 227</td>
<td>Fall 2011</td>
<td>Yes</td>
<td>Yoon Yun Tigran Mkrtchyan</td>
<td>01/22/15, Thurs., 11:00 a.m. to 12:15 p.m., Tigran, Yoon, Carole, &amp; Debby</td>
<td>1) The department changed the textbook in Fall 2014 that uses an online courseware with embedded statistical software. 2) A SLO question pool was developed and posted under faculty resources. 3) Assign similar SLO questions to online HW assignments. 4) Assess each SLO in the corresponding chapter test(s). 5) Reassess each SLO in the final exam.</td>
</tr>
<tr>
<td>Math 238</td>
<td>Spring 2014</td>
<td>Yes</td>
<td>Tigran Mkrtchyan</td>
<td>01/22/15, Thurs., 12:15 p.m. to 12:45 p.m., Tigran, Yoon, Carole, &amp; Debby</td>
<td>1) The course coordinator will obtain course outlines from other community colleges, CSU, and UC to compare and cut down some topics. 2) The course coordinator will revise the HW assignments according to the new Math 238 course outline from item 1 and add some algebra review HW as appropriate.</td>
</tr>
<tr>
<td>Math 240</td>
<td>Fall 2013</td>
<td>No</td>
<td>Ryan Yamada</td>
<td>01/14/15, Wed., 12:00 noon to 12:30 p.m., Ryan, Yoon, &amp; Debby</td>
<td>Even reassessment is not necessary for Math 240 until the 3-year cycle is due, the department felt strongly that some homework should be done using paper and pencil in order to write out each step for better understanding a concept. Instead of assigning online homework for graphing, verifying an identity, and solving an equation, written homework is given as an offline assignment. Instructors are expected to grade the written HW assignments.</td>
</tr>
</tbody>
</table>

**Semester of Reassessment:**
- Fall 2017
- Spring 2015
<table>
<thead>
<tr>
<th>Course</th>
<th>Semester</th>
<th>Assessment</th>
<th>Instructor</th>
<th>Date</th>
<th>Details</th>
</tr>
</thead>
</table>
| Math 245 | Fall 2014 | Yes        | SLO1 SLO2  | Tigran Mkrtchyan | 1) Rewrite SLO1 and SLO2 to better represent the core content of the course.  
2) Change some online HW assignments to offline written HW assignments.  
**Semester of Reassessment:** Fall 2015 |
| Math 260 | Fall 2014 | No         | Ryan Yamada |           |                                                                         |
| Math 265 | Spring 2014 | Yes  | SLO2  | Tigran Mkrtchyan | 1) Worksheets developed from Math Jam will be posted under Faculty Resources.  
2) Math Center will provide workshops for worksheets review for the 1st two weeks of instructions. Students are expected to know the content of each worksheet in order to be prepared to take Math 265.  
**Semester of Reassessment:** Spring 2015 |
| Math 266 | Spring 2014 | No         | Ryan Yamada |           |                                                                         |
| Math 267 | Spring 2014 | No         | Debby Wong  |           |                                                                         |
| Math 270 | Fall 2014  | No         | Emil Sargsyan |           |                                                                         |
| Math 275 | Spring 2014 | No         | Emil Sargsyan |           |                                                                         |
Math 105 Assessed in Fall 2014

1. Add a lab component with embedded tutoring
2. Modularize the curriculum for Math 105: students work on computers at their own pace, where a tutor is regularly available during classtime, and an instructor facilitates student progress.
3. Currently Math 105 has no prerequisites. This option would eliminate Math 105 as a credit course, and combine its content with Math 112 into a new course, Math 110. The placement test would now be required for enrolling into Math 110 for all students. Students performing below the placement level for Math 110 would be directed to take a new non-credit modularized version of Math 105.

Math 112 Assessed in Fall 2013

Recommendation:

Based on the results and the above analysis, the following measures can be taken to improve student performance as it relates to the first SLO part.

1. More time should be spent explaining all SLO 1 concepts including methods of “Perform operations and simplify numerical and algebraic expression involving integer and rational numbers” and more activities and/or worksheets should be provided about these topics.

2. All instructors teaching Math 112 should be made aware of the results of this study and its recommendations especially the adjunct faculty members who are not on campus as much as the full-time members.

3. To ensure the maximum completion rate by the students, we may want to create a special quiz containing only the SLO questions. This will address the possibility of student not answering an SLO question due to lack of time or concentration on other (non-SLO) parts of the final exam.
Math 115 Assessed in Fall 2014

(1) For assessing SLO's in Math 115, questions should be chosen that are more typical Elementary Algebra questions. The more difficult concepts should be assessed in Math 125.

(2) Re-assess Math 115 using the same questions but placed on chapter tests, rather than on the final where students feel overwhelmed with the amount of material, and are not necessarily prepared appropriately.

(3) For next round of SLO assessment in Math 125, the same type of questions students struggled with in Math 115 should be assessed to check if revisiting those difficult concepts and retesting students on these topics in the following course shows an improvement. The department expects to see better results on these difficult topics.

Math 121 Assessed in Spring 2014

SLO 1

The results exceeded the department’s goal of 70%, with 94% of students scoring 3 points or better on the assessment question.

Recommendation:

Because these types of problems are essential to the subsequent trigonometry course, the department will continue to monitor student progress on these concepts. The course outline will continue to allot ample class time for these concepts and these types of problems will be continue to be featured on recommended homework assignments.

SLO 2

The results exceeded the department’s goal of 70%, with 84% of students scoring 3 points or better on the assessment question.

Recommendation:

While students did well on this assessment question, proofs are always challenging for geometry students. Instructors will continue to emphasize proofs during class time and on homework assignments and tutoring support will continue to be available to ensure that students continue to meet this learning objective.
Math 123A Assessed in Fall 2014

Pertaining to SLO2, which fell below expectations, it is recommended that more questions on factoring trinomials should be added to the online homework assignments. In spring 2015, Math 123A SLO2 will be assessed as soon as the objectives are taught and practiced. Multiple questions with varying degree of difficulty will be used as diagnostic measurement for SLO2 during lab hours. If the result of the reassessment does not meet the benchmark, immediate remediation using the online study plan will be implemented within two weeks followed by another reassessment of SLO2.

Math 123B Assessed in Fall 2014

No recommendation.

Math 123C Assessed in Fall 2014

No recommendation.

Math 125 Assessed in Fall 2013

No recommendation.

Math 129A Assessed in Fall 2014

No Recommendation.

Math 129B  Not assessed yet (offered once a year)

New course.
Math 137  Assessed in Fall 2014

This is the first assessment of the SLO for Math 137. This section of the course was assessed very close to the 70% benchmark. The combined results of two sections was 60% which is below the 70% benchmark. The pedagogy of this class is different than other math classes. The main focus of this class is to develop students' critical reasoning ability. The course is taught almost as a flipped class. The students and faculty's unfamiliarity with the new pedagogy may be a contributing factor for the assessment results.

Math 227  Assessed in Spring 2012

Instructors should review the concepts involving basic geometry before explaining the topics of the normal distribution. Also, instructors should go over Chapter 6 topics more thoroughly to ensure students' understanding of a normal distribution curve as a probability distribution curve. The supplemental exercises on SLO 1 topics should be developed and distributed to all Math 227 instructors at the beginning of the Fall 2012 semester.

Instructors should designate more time in teaching a single population hypothesis testing. Also, they should provide more examples and a thorough explanation in hypothesis testing. In addition, the supplemental exercises on SLO 2 topics should be developed and distributed to all Math 227 instructors at the beginning of the Fall 2012 semester.

Math 238  Assessed in Spring 2014

Since the prerequisite for Math 238 is Intermediate Algebra which is underprepared students for the rigorous Math 238 course, class time is taken away to review some algebra skills. Also the contents for Math 238 are overwhelming. The Math 238 coordinator will research contents for Math 238 for other community colleges and revise the curriculum to cut down some topics if applicable. The drastic dropout rate for the course was also a concern to the department; only 15 took the final exam out of a full class enrollment from the beginning of the semester.
Math 240 Assessed in Fall 2013

The overall SLO results are satisfactory. This means the COR, choice of textbook, and the Math 240 department outline including the suggested timeline per chapter are adequate. SLO performance can be further improved by using a combination of online and written homework. Although there are advantages such as algorithmic questions, online tutorial resources, automatic grading, and animation in using online homework assignments, some concepts such as graphing with transformations, verifying identities, and solving trigonometric equations are better served with paper and pencil practice. For these three topics, instructors should consider assigning and grading some written homework in addition to the assigned online homework.

Math 245 Assessed in Fall 2014

Both SLOs fell short of the 70% benchmark. The committee recommends implementing one of the following scenarios in order to remedy the situation:

1. Maintain the number of hours allocated within Math 245, but include a lab/classwork assignment especially pertaining to SLO1. Much of the required practice that students get in rational functions (SLO1) involves some multiple choice questions on My Math Lab, but also graphing which is computer-aided. This may be hampering deeper understanding because students are not getting enough hands-on practice. The department should consider requiring a paper lab on graphing rational functions.

2. Since SLO2 is covered toward the end of the semester, the department should investigate whether instructors are allocating enough time to complete the topics in sequences and series. Since this topic is conceptually independent of the preceding material covered in the course, it may be wise to cover it at the beginning, or during the middle of the course, and not at the end.

3. The department will eliminate current SLO2 since it is a course objective rather than the core content of the course. On the contrary, current SLO1 contains too many objectives. The department will rewrite the current SLO1 into two new SLOs.
Math 260  Assessed in Fall 2014

No Recommendation.

Math 265  Assessed in Spring 2014

Even though students overall did not perform bad on the chapter exams covering integrals (chapter 5), they lack conceptual knowledge of trigonometry. Most students taking Math 265 are underprepared for the algebra and trigonometric skills. A Math Jam for Calculus Readiness funded by STEM grant will be offered a few times during an academic year to assist students in this area of deficiency. It’s also recommended to introduce trigonometric functions earlier in a Precalculus course and use those functions throughout the course intensively.

Math 266 Assessed in Spring 2014

No Recommendation

Math 267 Assessed in Spring 2014

No Recommendation.

Math 270  Assessed in Fall 2014

No Recommendation.

Math 275  Assessed in Spring 2014

No Recommendation.